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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/015,598	12/17/2001	Makoto Shizukuishi	108235-00001	4907

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ARENT FOX KINTNER
PLOTKIN & KAHN, PLLC
Suite 600
1050 Connecticut Avenue, N.W.
Washington, DC 20036-5339

EXAMINER	
YODER III, CHRISS S	
ART UNIT	**PAPER NUMBER**
2622	

DATE MAILED: 04/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/015,598	SHIZUKUISHI, MAKOTO	
	Examiner	Art Unit	
	Chriss S. Yoder, III	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,8,10,12,14,16,18,20,22,24 and 26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *2* is/are allowed.

6)☒ Claim(s) *1,3-6,8,10,12,14,16,18,20,22,24 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed March 27, 2006 have been fully considered but they are not persuasive.

Applicant argues, with respect to claims 1 and 8, that the imaging sensor of Ochi is of a MOS type, and the imaging device of Ohsawa is a CCD, and that Ohsawa teaches Ohsawa teaches keeping a gap Gv between adjacent transfer electrodes 20, whereas Ochi discloses a continuous electrode 8 formed over a continuous photosensitive layer 9 to form an array of pixels overlapping in both the horizontal and vertical directions, to thereby eliminate moiré fringes. Therefore, using the arrangement of Ochi in the imaging device of Ohsawa would eliminate the predetermined gap sections Gv in Ohsawa. Hence, the proposed combination would require a substantial reconstruction and redesign of the elements of Ohsawa as well as a change in the basic principle under which Ohsawa was designed to operate.

However, the Examiner points out that the imaging devices of both Ochi and Ohsawa are CCD's (Ochi: column 4, lines 28-29). The Examiner would also like to point out that the Ochi device was not relied upon to teach the use of adjacent transfer electrodes having a gap Gv between them, Ochi was merely used to teach that by changing the arrangement of pixels (in an arrangement with a honeycomb pattern) is preferred in order to reduce moiré fringes (column 3, line 68- column 4, line 2). The use of the continuous electrode 8 formed over a continuous photosensitive layer 9 in Ochi was not relied upon to teach the use of adjacent transfer electrodes having a gap Gv.

This limitation is taught by Ohsawa, and therefore, the proposed combination would not require a substantial reconstruction and redesign of the elements of Ohsawa.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1 and 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohsawa et al. (US Patent # 5,210,598) in view of Ochi (US Patent # 4,441,123).

2. In regard to claim 1, note Ohsawa discloses the use of a solid state image sensor, comprising a plurality of transducer column groups (figure 1: 14, there are multiple columns of transducers), each of which is composed of a first photoelectric transducer column wherein a plurality of photoelectric transducers are disposed at given intervals in a given direction (figure 1: 14), and a second photoelectric transducer column wherein a plurality of photoelectric transducers are disposed at said given intervals in said given direction (figure 1: 14, there are multiple columns of transducers), wherein transfer registers are disposed between the respective photoelectric transducer columns so as to invade spaces between the respective photoelectric transducers in the photoelectric transducer columns adjacent to each other and so as not to contact each other (figure 1: 16, each transfer register 16 is placed between transducer columns), the solid state image sensor further comprising a plurality of monolayer electrodes which

pass between the photoelectric transducers and extend in a direction that intersects said given direction (figure 1: 20; the given direction is considered to be the vertical direction, and the electrodes intersect the given direction perpendicularly by passing between the transducers in the horizontal direction), and which are disposed so as to be a given distance apart from each other in such a manner that signal charges generated in the photoelectric transducers are transferred along the transfer registers (column 4, lines 5-10; the electrodes 20 serve as vertical charge transfer control electrodes of the CCD).

Therefore, it can be seen that Ohsawa fails to disclose that the second column is disposed so as to be shifted from the first column by a given amount in said given direction. In analogous art, Ochi discloses the use of a solid state imaging device with an array of pixels arranged in columns and rows. Ochi discloses that the second column is disposed so as to be shifted from the first column by a given amount in said given direction (column 3, lines 65-67; and figure 4). Therefore, it would have been obvious to one of ordinary skill in the art to modify the Ohsawa device to include the use of the second column being disposed so as to be shifted from the first column by a given amount in said given direction as taught by Ochi in order to reduce moiré fringes (column 3, line 68- column 4, line 2).

3. In regard to claim 3, note Ohsawa discloses that the spacing between the monolayer electrodes above the transfer registers is formed in a linear configuration (figure 1: 20, each electrode is linearly formed above the transfer registers 16), from one side edge of the transfer registers toward the other side edge of said transfer registers

(figure 1: 20, the electrodes are formed in the direction perpendicular to the transfer registers 16).

4. In regard to claim 4, note Ohsawa discloses that the reflectivity of the monolayer electrodes is lower than that of metal aluminum itself (column 3, lines 65-67Ohsawa discloses that the monolayer electrodes are formed from polycrystalline silicon layers, and based on the properties of materials, polycrystalline silicon has a lower reflectivity than aluminum).

5. In regard to claim 5, note Ohsawa discloses that the monolayer electrodes are made of low-resistance polysilicon (column 3, lines 65-67).

6. In regard to claim 6, note Ohsawa discloses that the monolayer electrodes are formed by stacking a plurality of electrode materials (column 9, lines 3-16; and figure 13: 108, 110, and 112).

7. Claims 8, 10, 12, 14, 16, 18, 20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohsawa et al. (US Patent # 5,210,598) in view of Ochi (US Patent # 4,441,123) and in further view of Miyake et al. (US Patent # 5,274,250).

8. In regard to claim 8, note Ohsawa discloses the use of a solid state image sensor, comprising a plurality of transducer column groups arranged in parallel (figure 1: 14, there are multiple columns of transducers), each of which is composed of a first photoelectric transducer column wherein a plurality of photoelectric transducers are disposed at given intervals in a given direction (figure 1: 14; the given direction is considered to be the vertical direction), and a second photoelectric transducer column

wherein a plurality of photoelectric transducers are disposed at said given intervals in said given direction (figure 1: 14, there are multiple columns of transducers), wherein transfer registers are disposed between the respective photoelectric transducer columns so as to invade spaces between the respective photoelectric transducers in the photoelectric transducer columns adjacent to each other and so as not to contact each other (figure 1: 16, each transfer register 16 is placed between transducer columns), the solid state image sensor further comprising a plurality of monolayer electrodes which pass between the photoelectric transducers to extend in a direction which intersects said given direction (figure 1: 20; the given direction is considered to be the vertical direction, and the electrodes intersect the given direction perpendicularly by passing between the transducers in the horizontal direction), and which are disposed to sandwich given gaps therebetween in such a manner that signal charges generated in the photoelectric transducers are transferred along the transfer registers (column 4, lines 5-10; the electrodes 20 serve as vertical charge transfer control electrodes of the CCD), and a light-shielding film formed above the monolayer electrodes and having light-transmitting portions through which light received in light-receiving areas of the photoelectric transducers is transmitted (column 4, lines 48-51; and figure 2: 30).

Therefore, it can be seen that Ohsawa fails to disclose that the second column is disposed so as to be shifted from the first column by a given amount in said given direction and the use of a nonconductive light-shielding film formed above the monolayer electrodes.

In analogous art, Ochi discloses the use of a solid state imaging device with an array of pixels arranged in columns and rows. Ochi discloses that the second column is disposed so as to be shifted from the first column by a given amount in said given direction (column 3, lines 65-67; and figure 4). Therefore, it would have been obvious to one of ordinary skill in the art to modify the Ohsawa device to include the use of the second column being disposed so as to be shifted from the first column by a given amount in said given direction as taught by Ochi in order to reduce moiré fringes (column 3, line 68- column 4, line 2).

Also in analogous art, Miyake discloses the use of a color image sensor with a light shielding layer. Miyake disclose the use of a nonconductive light-shielding film formed on the image sensor (column 9, line 62- column 10, line 9). Therefore, it would have been obvious to one of ordinary skill in the art to modify the Ohsawa device to include the use of a nonconductive light-shielding layer, as taught by Miyake, to replace the use of a the metal film used by Ohsawa in order to eliminate the use of connections such as ground that are used in typical metal layers so as to simplify the configuration (column 10, lines 10-20).

9. In regard to claim 10, note Miyake discloses the use of light-transmitting portions through which the light having a given wavelength received in light-receiving areas of the photoelectric transducers is transmitted, and light-shielding portions surrounding the light-transmitting portions are disposed in the same plane of the light-shielding film (figure 5: 34 and 35; the light-transmitting portions 34 filter the light and are disposed in the same plane of the light-shielding film).

10. In regard to claim 12, note Miyake discloses the use of a filter layer which transmits light of a given wavelength is formed below the nonconductive light-shielding film (figure 3B: 34 and 35; the filter layer is below the light-shielding layer).

11. In regard to claim 14, note Ohsawa discloses that all or a part of edge portions of the light-shielding film is extended toward the center of the light-receiving areas of the photoelectric transducers (figure 3: 30; 30 extends toward the center of the light receiving area 14).

12. In regard to claim 16, note Miyake discloses that the nonconductive light-shielding film is made of a resin material (column 9, lines 65-68).

13. In regard to claim 18, note Miyake discloses that the resin material contains a photosensitive resin or gelatin (column 9, lines 65-68).

14. In regard to claim 20, note Miyake discloses that the resin material is a material wherein a pigment which absorbs or reflects visible rays is dispersed in a resin (column 9, lines 65-68).

15. In regard to claim 22, note Ohsawa discloses that the central positions of the light-transmitting portions are off centered from the central positions of the photoelectric transducers (figure 3: 30a-b and 14; the center of the transducers are not the same as the center between film 30, which creates the light-transmitting portions).

16. Claims 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohsawa et al. (US Patent # 5,210,598) in view of Ochi (US Patent # 4,441,123), in

further view of Miyake et al. (US Patent # 5,274,250), and further in view of Yamaguchi et al. (US Patent # 6,344,666).

17. In regard to claim 24, note the primary reference of Ohsawa in view of Ochi and Miyake discloses the use of an imaging device as claimed in claim 8 above. Therefore, it can be seen that the primary reference fails to disclose that the arrangement pitch of central positions of the light-transmitting portions is made smaller than the arrangement pitch of central positions of the photoelectric transducers. Yamaguchi discloses the use of an image sensor wherein the arrangement pitch of central positions of the light-transmitting portions is made smaller than the arrangement pitch of central positions of the photoelectric transducers (column 5, line 54 – column 6, line 13; and figure 2: 22 and 26; the center portion of the sensor has the light-transmitting portion centered above the pixel, and the peripheral potion has the light-transmitting portion off center above the pixel). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to include the use of image sensor wherein the arrangement pitch of central positions of the light-transmitting portions is made smaller than the arrangement pitch of central positions of the photoelectric transducers, as taught by Yamaguchi, is preferred so that the amount of light entering the center and the peripheral portions of the chip can be made equal (abstract).

18. In regard to claim 26, note Yamaguchi discloses that the arrangement pitch of optical axis of microlenses arranged above the light-shielding film is made smaller than the arrangement pitch of central positions of the photoelectric transducers (column 5, line 54 – column 6, line 13; and figure 2: 22 and 27; the center portion of the sensor has

the microlenses centered above the pixel, and the peripheral potion has the microlenses off center above the pixel).

Allowable Subject Matter

19. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

20. As for claims 2, the prior art does not teach or fairly suggest the use of an image sensor solid state image sensor, comprising a plurality of transducer columns composed of a plurality of photoelectric transducers, transfer registers disposed between the photoelectric transducer columns, and a plurality of monolayer electrodes the photoelectric transducers, *wherein the spacing between the monolayer electrodes above the transfer registers is made narrower than the spacing between the monolayer electrodes above isolation regions for electrically isolating the transfer registers adjacent to each other.*

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chriss S. Yoder, III whose telephone number is (571) 272-7323. The examiner can normally be reached on M-F: 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CSY
April 7, 2006

LIN YE
PRIMARY EXAMINER